Greetings!

Cornell has been pondering its role in responding to the crucial global problem of creating energy, staunching demand, and treading lightly and responsibly on the Earth. This has been a year of exciting new developments at Cornell, from the president’s office to the College of Engineering to the departmental level. I am sure you will not be surprised that Chemical and Biomolecular Engineering has been at the forefront of many of these activities. In this issue, I hope you will be as pleased as I am with our reports of the commitment of Cornell’s president and provost to move this great university to the forefront of participation in the development of sustainable energy systems.

This spring, we were fortunate to have two wonderful speakers who hold preeminent positions in the chemicals and energy industries give us their clearly passionate views on energy. Dow’s CTO, Bill Banholzer, said in his lecture in Barnes Hall that the management of energy supply and demand is the single most pressing problem we face as a global community. Shell’s president, John Hofmeister, spoke in Olin Hall to a packed audience. He, like Banholzer, initiated a refreshingly open discussion on the balance of supply and demand and the important role engineers play in shaping public policy and public opinion. These talks came amidst the most exciting year I have seen at Cornell in regard to providing a clear sense of direction as to the university’s place in this grand challenge for our age.

What has heartened me most has been the willingness of the university to truly practice what it teaches. We will not simply study research issues in sustainable energy systems, nor simply offer energy-related educational programs to educate the next generation of students. Our goal, as stated by President Skorton in his reunion address (see page 9), is to live by these new “rules” and to work toward a “carbon-neutral” future in the course of our activities.

Chemical and Biomolecular Engineering is at the vanguard of these goals. Our decisions to recruit an “energy economist,” Andrew Hunter, and to develop a new and unique program in energy economics and engineering have been rewarded with student enthusiasm and alumni support. We have joined forces with Teresa Jordan, director of Earth and Atmospheric Sciences at Cornell, to develop educational and research programs that will bring climate scientists together with chemical and other engineers to help usher in a new era of industrial ecology. And, finally, our building renovation plans are being shaped by our commitment to be as energy conservative as possible.

The renovation design for Olin Hall is at an exciting stage. Design and planning will be complete by the end of the year, and we hope that construction will begin in the spring of 2008. Prepare to don your hard hat if you visit us next year.

Warmest regards to all our alumni friends,
Olin Hall Renovation:
Practicing What We Teach

As highlighted in last year’s Olin Hall News (OHN), we are finished with the detailed design phase of a $13M project that will provide us with air-conditioning for the first time in the history of the building, a much-needed major power upgrade, new windows, and greater safety for the occupants through sprinklers and improved fire alarms. The redesign will also pave the way for the creation of new laboratory space, a CBE student center, and a new classroom when Student Services leaves the building in about 2013.

As those of you who have been part of similar construction projects know, design options are evaluated on a life cycle analysis for payback over a suitable time period. When President Skorton announced Cornell’s carbon-neutral future, we paused to reevaluate our design options; we had earlier rejected installing an energy recovery system that would not make financial sense for a life cycle of about 20 to 25 years. After intense deliberations at Cornell surrounding metrics and value put on energy conservation and carbon-footprint, and research by our Philadelphia-based design firm, Ballinger, we came up with creative solutions that recovered energy and gave us the most carbon-neutral option possible. This new system will use so-called “chilled beams” that were developed in Europe and are starting to show up in U.S. installations. Olin will be the first Cornell building to use this technology. Interestingly, the financial impact of choosing this system was not as great as we had feared. We are planning to use green products wherever possible—flooring from renewable sources, recycled carpets, and “green” paint. We hope that our decision to be as “green” as possible in the renovation of Olin Hall will encourage other Cornell building projects to do the same. As the lead Ballinger design engineer said, “If engineers won’t do it, who will?”

Andrew Hunter’s class of apprentice energy economists and engineers took on the task of designing energy-efficient windows for Olin Hall. Using a software package from Los Alamos, they found that we could save about 15 percent of our energy needs by using double-glazed “low-e”-coated glass. Their findings assisted our decisions regarding window design, and the students were happy to have a real-world problem to solve.

We hope the project will begin at the end of the fall semester with removal of asbestos/transite and that construction will begin in about March 2008. Olin Hall will be a construction zone for about 18 months, with a much-anticipated completion date in time for the fall 2009 semester.

The university will provide us with roughly half the cost of the renovation project if we proceed now. The College of Engineering will also contribute significantly to the project, leaving the school with about $5M to raise. This is a challenge and it will be our top fund-raising priority for the next few years. It isn’t easy to raise money for bricks and mortar, but the existence of modern facilities has a clear impact on our ability to continue to attract the top students and faculty and staff members.

Olin Hall is overdue for facilities renovation. We are comforted by the fact that we have some of the most loyal alumni in the university. Indeed, a number of you have already risen to the challenge brought up in last year’s OHN by dedicating your annual gifts to the Chemical Engineering Building Fund. Nearly 20 years ago, Ted Doan and a team of alumni raised $10M to renovate the East Wing that has become the cornerstone of our research program. I am confident that our alumni friends will help us in this new generation of building renovation.

by Paulette Clancy
Rebecca B. Robertson, B.S. ChemE ’82, was the Fall 2006 Raymond G. Thorpe lecturer. Her talk, titled “The Value of Innovation,” explained the changes in venture capital investment in the medical sciences in recent years and the value of an engineering degree in facilitating medical research. Robertson specializes in early-stage investing in medical devices and diagnostics at Versant Ventures. Her career encompasses 24 years of venture capital and operating experience in medical products as an engineer, entrepreneur, corporate executive, and investor. Robertson spoke to an audience of around 100 faculty and staff members and students.

Joo Receives Tenure

Young Joo has been granted tenure and promoted from assistant to associate professor. His seminal work has developed theories for the instability of fluid flows that are driven purely by the viscoelasticity of the fluid. For instance, his doctoral work provided the first complete mechanistic understanding of the instability of polymeric fluids in Taylor-Couette flow, the discovery of a new instability in pressure-driven flows in curved channels (Dean flows), and quantitative comparison of theory and experiment for the marginal stability limits.

Joo worked in industry in Korea for several years. At Cornell, he studies electrosprun materials and has created an experimental laboratory to complement his theoretical studies. He has established a research program that unites polymer melt processing and fluid mechanics, two areas that formerly had little connection.

Electrospinning is a commercial process that uses electrical charges to form mats of ultrafine fibers. Previous polymer nanofibers produced by electrospinning came from polymer solutions or evaporation of a solvent. Joo’s group showed that polymer nanofibers can be produced from the melt using careful temperature control to allow the fibers to thin sufficiently during the spinning process. This approach is more environmentally benign than other methods because no solvents are involved. Joo’s group has made advances in the ability to spin fibers of composite materials with complex nanostructures and established collaborations with Cornell materials scientists. These innovations have captured the interest of industry, and Joo has developed a broad informal consortium of companies that support his research program.

Joo continues to study the fundamentals of viscoelastic fluid flows. With his Ph.D. student Colman Carroll, Joo has completed the most comprehensive experimental and theoretical study to date of the axisymmetric instability of a polymer jet formed by electrospinning. He has also followed up on his important experimental advances in temperature control in electrospinning with a theoretical study of the topic, and he is now in a unique position to open the door to a more fundamental and predictive strategy for understanding electrospinning of polymer nanofibers.

Joo has received several awards including an NSF CAREER award, a DuPont Young Faculty Award, a 3M Young Faculty Award, and a College of Engineering Teaching Award. He has redesigned and taught two required courses: the undergraduate separations course and the graduate advanced fluid mechanics course.

Joo will spend his sabbatical year working with scientists and engineers at Samsung in Korea.

Hanrath’s Research Focuses on Solar Energy

Tobias Hanrath, who joined the ChE faculty as an assistant professor this fall, was born and raised in Lügde, Germany. He pursued his bachelor’s degrees in chemistry and chemical engineering at the University of Tulsa. During his undergraduate tenure, Hanrath conducted research in two separate projects involving lithium polymer batteries and chemical vapor deposition (CVD) growth of thin carbon nitride films.

In 2000, Hanrath attended graduate school at the University of Texas at Austin, where he joined the group of Brian Korgel. His research efforts ranged from the growth of semiconductor nanowires in continuous supercritical flow reactors, to the study and modification of nanowire surface chemistry, and to the fabrication of single nanowire devices.

After obtaining his Ph.D. in 2005, Hanrath conducted postdoctoral work at MIT on virus-mediated assembly of nanocrystals in Angie Belcher’s biomolecular materials group. In 2006 he joined the group of René Janssen at the Technical University of Eindhoven, the Netherlands, to work on fabricating hybrid solar cells composed of conjugated polymers and semiconductor nanocrystals.

Hanrath’s research at Cornell aims at the full realization of the unique properties of semiconductor nanocrystals as building blocks in solar energy conversion and storage devices. He hopes to identify alternative, environmentally benign, semiconductor nanomaterials with similar optoelectronic properties to replace the currently used lead chalcogenide nanocrystals.

Daniel Joins CBE School

Susan Daniel received her Ph.D. in chemical engineering in 2005 from Lehigh University. She studied the effect of wettability gradients and vibration on the motion of liquid droplets on surfaces. As a result of these studies, she developed novel methods to control the motion of discrete droplets on a surface. Using these new protocols she created miniaturized batch-wise processes on a chip using discrete droplets to transport material on a surface. Such discrete transport devices are alternatives to continuous flow lab-on-a-chip paradigms. Her work resulted in publications in Science, Langmuir, and Proceedings of the National Academy of Sciences.

After Lehigh, Daniel began a postdoctoral appointment in the Department of Chemistry at Texas A&M University to study biological surface science. Specifically, she focused on using solid-supported bilayers as a mimic of the cell surface and combined them with microfluidics to create new biological assays. She created novel protein binding assays using nanoscale filters that enabled screening of proteins based on size for biosensor applications. Daniel also contributed to the development of a single-protein-channel stochastic sensing device for the detection of biological agents. Most recently, she pioneered a new method to separate membrane-bound species using bilayer electrophoresis. Her work in this area has appeared in the Journal of the American Chemical Society, the MRS Bulletin, and Langmuir.

Daniel’s future research will combine microfluidics, surface chemistry modification, and lipid bilayers to create novel methods and devices for separation and array formation for combinatorial studies of membrane species. She also plans to study effects of membrane chemistry, curvature, and temperature on viral and protein binding and aggregation in membranes.
Shell President John Hofmeister Speaks about Energy Security and Supply

In a lecture titled “How the United States Can Ensure Energy Supply for the Future,” John Hofmeister, president of Shell Corporation, provided frank comments about the role of government policy in sustainability issues.

Hofmeister believes that to ensure U.S. energy for the future, the energy industry must address the delicate balance between production and consumption with increased supply. He called for a full array of energy sources: conventional oil and gas, including access to resources currently off-limits in offshore waters and on federal lands, as well as unconventional oil and gas from oil shale and oil sands. In addition, he encouraged development of clean fossil fuels and alternative and renewable energy sources, while conducting business in socially and environmentally responsible ways.

It’s not often that the president of a major energy company visits campus, and all of the nearly 300 seats in the lecture room were filled with students and faculty members, with others sitting on the stairs and outside the open doors.

The lecture, which was held on April 11, was co-sponsored by the College of Engineering’s Energy Seminar series and the College of Engineering Alumni Association’s Enterprise Engineering colloquium.

Dow VP Talks about Sustainability

In a time when “sustainability” is becoming a household word, the Dow Chemical Company is making its own contributions, says William F. Banholzer, Dow’s vice president and chief technology officer.

Banholzer, who gave a lecture in Barnes Hall on April 18 to a large audience of students and faculty and staff members, explained that Dow is devoted to sustainability and has set a goal of reducing global energy intensity as well as GHG (greenhouse gas) emissions intensity and eventually reducing absolute emissions within the company. Banholzer asserted that energy intensity was reduced by 22 percent between 1994 and 2005. Dow would like to see a further 25 percent reduction in energy intensity from 2005 to 2015, and by the year 2025 to aspire to reduce absolute emissions. Dow’s progress toward these goals can be monitored on the company’s web site.

To accomplish this, Banholzer emphasized the need to increase energy efficiency by using natural products and improving technologies already in existence, such as photovoltaic cells and diesel engines. Although there is promise in producing ethanol from corn, Banholzer contends that it costs more to produce energy in this way because only 3 percent of sunlight is converted to fuel as opposed to more than 10 percent captured by photovoltaic cells.

Banholzer concluded that sustainability measures must save money, enhance global competitiveness, emit fewer GHG effects, and thus promote energy security for society by reducing demand and lowering energy bills.

The lecture was sponsored in part by the School of Chemical and Biomolecular Engineering.

This lecture was given in honor of the late Herbert D. Doan, B ChemE ’49, former president of Dow, and the late Raymond G. Thorpe, M.S. ChemE ’47, emeritus professor of chemical and biomolecular engineering.
International Perspectives on Energy: Bio-Refining, Development, and Social Change by Samir Somaiya

The Modern Bio-Refinery
The modern bio-refinery is one that produces products from renewable resources. The Godavari Sugar Mills manufactures more than 20 products from sugarcane and other agricultural raw materials as a feedstock. The company produces sugar, power, ethanol, and a range of ethanol-based chemicals and is also working on research to make polymers and cellulose-based products, all using renewable feedstocks. It is also working on other raw materials and sponsors an active research laboratory, the K. J. Somaiya Institute of Applied Agriculture Research. In 2006, the company generated more than $120 million of business.

Improving Yields, Productivity, and Quality of Life
The Godavari Sugar Mills operates in more than 1,000 villages in rural India, spread over the states of Maharashtra and Karnataka. We have found that, with the correct interventions at the right time, it is possible to improve the productivity of land and quality of sugarcane to be beneficial to both the farmer and the company. The company works with more than 40,000 farmers in these villages and helps provide them with microfinance and access to high-quality farm inputs and advice when needed. The farmers are also provided with micronutrients and organic compost so that soil fertility improves, and water harvesting programs are encouraged to build the water table.

Renewable Energy, Ethanol Production, and Climate Change
The Godavari Sugar Mills produces more than 24 megawatts (MW) of power from renewable resources and is further expanding energy production to 64MW. About 40MW will be fed into the grid. The project produces power from a carbon-neutral source instead of fossil fuel and thus mitigates climate change.

The company also manufactures ethanol from sugarcane and is conducting research on producing it from sweet sorghum and tropical sugar beet. The company is also investing in research to make higher-value fermentation products from sugarcane juice, as well as from the cellulose in the sugarcane fiber.

Somaiya Vidyavihar
The Somaiya Trust has founded and manages more than 30 institutions located in Mumbai, India. There are 25,000 students and 1,500 faculty members at this institution. Education is imparted in fields as diverse as the humanities, sciences, engineering, vocational sciences, engineering, medicine, management, and religion. Students start at kindergarten and can graduate with a Ph.D. The trust also manages six rural schools, where more than 2,500 children study in extremely small villages.
Energy Economics and Engineering Course Has Good First Year

by Andrew Hunter

They faced a daunting challenge, but the first year of the new Energy Economics and Engineering (EEE) course ended successfully when five teams of five students presented their proposals for reducing U.S. gasoline demand by 4 million barrels a day (half of current demand) by 2017 while keeping carbon emissions at today’s levels.

All five teams attempted to obtain liquid fuels from biomass but were unwilling to believe this would solve the problem, either because of the poor economics of extracting ethanol from corn or because of the untested nature of conversion of cellulose in an easy-to-grow commodity such as switchgrass. Capturing liquid fuels from coal was also considered and rejected and thus electric or hybrid cars came out big winners. Of course, this raised questions about capturing the carbon from electric utilities and the fragile state of the electric grid. In turn, the teams were forced to choose between carbon-rich coal and nuclear, wind, and solar power, each with its own limits and risks.

In a mid-semester project, the same teams competed to see how they would meet Cornell campus energy demands with oil at $400 per barrel and carbon levels at 50 percent of those today. They came up with a variety of measures that would reduce demand, without curtailing normal campus life too much, and then went on to examine alternatives such as additional hydropower, a wind farm on Mount Pleasant, willow wood from Cornell Plantations, and changing the school season to avoid the extremes of temperature.

EEE is a continuous feast of technologies that are evolving rapidly. Maybe switchgrass will provide design input toward the creation of optimal metabolic pathways. Students discover that there are no “silver bullets” but that there are exciting and innovative approaches that cumulatively provide answers—and more questions.

ChE Faculty Win Sustainable Energy Systems Awards

The College of Engineering organized the first of what we hope to be an annual competition to fund seed projects pertaining to sustainable energy systems. Six awards of $30,000 were made to support graduate student research in this area, one of the college’s strategic research thrusts for the future. Faculty members from the School of Chemical and Biomolecular Engineering won three of these six awards, the others going to faculty members working in wave power generation (Civil Engineering), an assessment of carbon sequestration sites in the Southern Tier of New York State (Earth and Atmospheric Sciences in collaboration with a power company, AES), and a systems approach to energy generation and consumption on the Big Island of Hawaii (Mechanical and Aerospace Engineering, Electrical and Computer Engineering, and Earth and Atmospheric Sciences).

The three chemical engineering projects involved five faculty members, four of whom are untenured assistant professors, marking the beginning of what we hope will be a wave of interest in sustainable energy systems.

Tobias Hanrath, who joined the faculty this year, wrote a winning proposal titled “Hybrid Carrier Multiplication Nanocrystal Solar Cells.” The nanocrystal solar cells in Hanrath’s proposal break the current limitation of solar cell efficiency to a one-to-one relationship between an absorbed photon and the generation of a single hole-electron pair. Nanocrystalline materials are capable of generating multiple carriers per photon. Hanrath will develop novel materials based on light harvesting lead salt nanocrystals on Ge nanowires to direct the flow of charge carriers. His research at Cornell will focus on the creation and optimization of photovoltaic devices.

Brad Anton and Yong Joo received support for their proposal to study the effect of cellulose microstructure on the kinetics of enzymatic hydrolysis. Graduate student Heidi Park will undertake a systematic study of the factors affecting biomass conversion using electrospinning to produce more uniform and well-characterized nanostructured cellulose. This is a unique contribution in a field dominated by “cook and look” techniques; it is arguably the first attempt to carefully tease apart and hence decouple the relative importance of the many factors that influence the central issue of enzymatic hydrolysis of cellulose digestion.

Matt DeLisa and Jeff Varner’s proposal, “A Hybrid Computational-Experimental Approach to Sustainable Manufacturing in Bacteria,” offered a route to energy products, in this case an important commodity chemical, using bacteria. In their innovative scheme, an “assembly line” of enzymes will be created by engineering the metabolic pathways in bacteria to improve yield of a desirable energy product. Varner’s skills in computational modeling will provide design input toward the creation of optimal metabolic pathways a priori. This forms a natural partnership with DeLisa’s ability to experimentally create the engineered bacteria predicted by the computations.
President Skorton Signs Carbon-Neutral Agreement

In February 2007, Cornell president David Skorton joined more than 80 U.S. universities in signing an agreement to make Cornell’s upstate campus carbon-neutral in the future. Cornell was only the second Ivy League university to sign this far-reaching agreement and possibly the first in New York State. Skorton followed up this announcement in June with a reunion address that reported the university’s intention to support a campus-wide initiative in sustainable development, as originally suggested by former president Jeff Lehman. This initiative will focus on energy, on the preservation of the environment, and on the far-reaching impact of resource deprivation on population, power, and inequality.

Skorton’s commitment to a carbon-neutral future is a bold and uncharted endeavor. Although it is unclear how this goal will be achieved, a start is clearly to define the system boundaries and then to work on energy supply, demand, and conservation; economics and public acceptance; and other important factors. A small working group, led by Liberty Hyde Bailey Professor Timothy Fahey from the Department of Natural Resources, has been assembled to begin to tackle this project. The team consists of representatives from the College of Engineering (Paulette Clancy, CBE, and Teresa Jordan, EAS), Applied Economics and Management, Ecology and Evolutionary Biology, and two key staff members, one of whom (Lanny Joyce) was instrumental in the Lake Source Cooling project and the other (Robert G. Bland) who is a former student in Olin Hall.

Cornell has an impressive record of energy conservation. Over the past decade, its energy consumption has remained flat, helped by Lake Source Cooling and the decision to build a co-generation plant.

More details on the decision to become carbon-neutral can be found at www.news.cornell.edu/stories/Feb07/climate.change.aj.html. Skorton’s reunion speech can be found at www.cornell.edu/president/speeches_2007_0609.cfm.

ChE Alumnus Will Chair CEAA Conference

Gus Noojin, B.S. ChemE ’69, has agreed to chair the 25th Annual Cornell Engineering Alumni Association (CEAA)–sponsored conference, which will focus on sustainable energy systems. The conference will be held March 28–29, 2008, on Cornell’s Ithaca campus. Noojin is a former president and CEO of Shell U.S. Gas and Power. He has served as chair of the School of Chemical and Biomolecular Engineering Advisory Council for three years.

Renewable Fuel Sources Course Is Offered

As part of walking the talk on the energy front we introduced a new course this year on ag-based renewable fuels, taught by Samir Somaiya, B.S. ChemE ’90; M.S. ChemE ’92; M.B.A. GradMgmt ’93 (Cornell); M.P.A. ’05 (Harvard), executive director of the Godavari Sugar Mills Ltd. in India.

All of our energy-related electives have been designed to take advantage of the expertise of our industrial practitioners. That made it our good fortune that Somaiya volunteered to take time off to come teach a course that dealt with renewable resources from the perspective of the Indian agricultural market and the Indian economy, both of which differ considerably from the conditions in the United States and Western Europe.

Specifically, the course dealt with the potential of agriculture to meet the needs of the resources and energy we consume. Somaiya used the example of sugarcane as a feedstock, starting by explaining how markets can create an environment that allows for innovation, then continuing with a discussion of how successful implementation includes the need to extend innovation in areas of biotechnology, chemistry, engineering, agriculture, public policy, markets, and even microfinance.

The course was well received and we look forward to Somaiya’s return in two years to offer it again. We would like to expand this idea into an international perspectives elective where speakers come every two to three years to present a concentrated three-week course to our “energy-hungry” students. If you have knowledge and expertise on energy-related issues in a foreign market and find the idea of a short stay in Ithaca teaching our students to be attractive, then please contact Al Center or Paulette Clancy.
Robert Langer Receives National Medal of Science

On Friday, July 27, 2007, Robert Langer, B.S. ChemE ’70, received the National Medal of Science from President George W. Bush. The ceremony took place at the White House where President Bush awarded the National Medals of Science and National Medals of Technology honoring the nation’s leading researchers, inventors, and innovators.

Congress established the program in 1959, which is administered by the National Science Foundation (NSF). This award program honors individuals for pioneering scientific research in many fields including the engineering sciences.

Langer has had a long and distinguished academic career at MIT in Cambridge, Mass., where he is a professor. He received this honor for his revolutionary discoveries in the areas of polymeric controlled release systems and tissue engineering and synthesis of new materials that have led to new medical treatments that have profoundly affected the well-being of humankind.

Former Director Gubbins To Be Honored

(continued from page 4)

was director of the School of Chemical Engineering at Cornell from 1983 to 1990. He masterminded the renovation of Olin Hall’s east wing that provided the school with a solid foundation for research facilities.

He has won many prestigious awards, including the AIChE Alpha Chi Sigma Research Award in 1986 and the William H. Walker Award for Excellence in Contributions to Chemical Engineering Literature in 2001, and was made an AIChE fellow in 2004. He won the American Chemical Society Joel H. Hildebrand Award for research on liquids in 1994. He has been a member of the National Academy of Engineering since 1989. Gubbins joined the North Carolina State University faculty in 1998 where he is the W. H. Clark Distinguished University Professor and co-director of the Center for High Performance Simulation.

Gubbins is known for his pioneering spirit in developing international collaborations. To make the point, he was one of the first ChE faculty to have a business card printed in Japanese on the reverse side. Not surprisingly, then, he has held visiting professorships around the world: University of Oxford (1979–80; 1986–87), University of California, Berkeley (1982), University of Wisconsin, Madison (1993), Australian National University, Canberra (1993–94), Imperial College, London (1970–71; 1994; 2002), Chiba University, Japan (1999), and Université Paris-Sud, Orsay, France (2001–02). Congratulations and best wishes to Keith for all his achievements.

ChE Ph.D.s Begin Faculty Positions

Chongli Yuan, Ph.D. ChemE ’07, will begin a faculty appointment in the Chemical Engineering Department at Purdue University in fall 2008. While at Cornell, Yuan worked with Lynden Archer on the biophysics of DNA packaging in nucleosomes. In July 2007, she began a postdoctoral appointment with Timothy Richmond in the Institut für Molekularbiologie und Biophysik, Swiss Federal Institute of Technology (ETH), Zurich. She received her B.E. degree from East China University of Science and Technology (ECUST) in 2002.

Chin-Lung Kuo, Ph.D. ChemE ’06, a student of Paulette Clancy, will begin a faculty position in materials science and engineering at the National Taiwan University (NTU) this fall. He conducted his postdoctoral research at the University of Texas at Austin (Gyeong Hwang’s group) for 2 ½ years. Kuo earned his B.S. degree in chemical engineering at NTU.

Hong Shen, Ph.D. ChemE ’04, who was a student in the lab of Mark Saltzman, took up a faculty position in the Chemical Engineering Department at the University of Washington at Seattle in March 2006. She received her B.A. from Tsinghua University (China) in 1995 and her M.S. from Tsinghua University in 1998.

Jeremy Goldman, B.S. ChemE ’98, has been an assistant professor for three years. After he graduated from Cornell, he enrolled as a Ph.D. student at Northwestern University in biomedical engineering. He worked with Shu Q. Liu, an expert in vascular engineering. Goldman graduated in 2002 and immediately began a postdoc with Melody A. Swartz, studying interstitial flow in the microcirculation at the Swiss Federal Institute of Lausanne (EPFL). He left Swartz’s lab in 2004 for his current faculty position at Michigan Technological University.

Mariajose Castellanos, Ph.D. ChemE ’05, a former student in the Shuler lab, is now an assistant professor in the Department of Chemical and Biochemical Engineering at the University of Maryland, Baltimore County. In addition to teaching, Castellanos’ research includes viral stochastic descriptions, tools for modeling metabolic networks, HIV dynamics in connection to T-cell activation, and signaling mechanisms in neurons. Her group’s main goal is to provide a better understanding of biological behaviors through the development of structurally, biochemically, and physiologically detailed computational models based on experimental data. She was recognized as the HENAAC, Inc. (Hispanic Engineer National Achievement Awards Conference) Role Model of the Week for February 20–26, 2006, and was chosen by the undergraduate students as their best teacher in 2006. Last year, she became engaged to Virantha Ekanayake, a fellow Cornell alumnus. A wedding was planned for August 4 in Mexico City.

Kuo’s group (continued from page 4)

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Hong Shen, Ph.D. ChemE ’04, who was a student in the lab of Mark Saltzman, took up a faculty position in the Chemical Engineering Department at the University of Washington at Seattle in March 2006. She received her B.A. from Tsinghua University (China) in 1995 and her M.S. from Tsinghua University in 1998.

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It was the turn of classes 7s and 2s this past June 9. 
A lovely breakfast was hosted by the CBE school for its alumni under the tent in Ho Plaza.

Photos by Thomas Hoebbel
Alumni Participate in Teaching

We are again fortunate to have a large cadre of alumni who returned to campus to help with our educational programs. Alumni give the students the benefit of their experience and enrich our classes.

CHEME 572 Managing New Business Development

The board of directors of this course consisted of ChE alumni Jim Staid and Chris Wolcott (both Exxon-Mobil, retired), Martin Schwartz (Southwall Technologies, retired), Charlie Shafran (Pfizer), and Terry Yamada (Lone Star Industries); Cornell alumni Carrie Shearer (Calret, retired) and Steve Elkins (Bank of New York, retired); and Wells College Phi Beta Kappa chemistry alumnus Claudia Elkins (Akzo Nobel Research Lab, retired). Next year, Bob Ganz will co-teach the course with Al Center, reflecting Ganz’s many years of experience in mergers and acquisitions work for Exxon.

CHEME 462 Chemical Process Design

The senior process design course benefited with help from alumni Tom Dill (Amoco, retired), Lowell Youngquist (Dow, retired), Bill Cleary (Corning Inc.), Kent Göklen (Merck), Jim Staid (ExxonMobil), John Carberry (DuPont), and Bob Ganz (ExxonMobil). Some worked from home by teleconferencing and those closer to campus were on site. The alumni came to campus several times, providing a “fresh eyes” review at mid-semester and evaluating the final design presentations.

CHEME 526 Hydrocarbon Resource Exploration and Development

This new course, affectionately subtitled “From Rocks to Docks,” was fortunate to have the active participation of Kyle Mork (Energy Corp. of America) and Shell employees Kelly Bland, Charles Grimm, and Jennifer Carrano.

CHAME 525 Chemical Engineering Tools and Equipment

Brock Tuczynski (Kraft) provided insight into food processing equipment.

CHEME 432 Chemical Engineering Laboratory

Kristina (Bullard) Phipps and Serena Schlake from Clorox gave a talk to the Unit Operations class about some of the unit operations involved in food processing.

CHAME 301 Nonresident Lectures

A number of Cornell ChE alumni gave students the benefit of their advice regarding career development: Christine Hewitt (Amen), Charles Grimm (Shell), Howard Greenberg (Bristol Myers Squibb), Diana Berkery (L’Oreal), Fazeela Rashid (Solera Capital), Mike DiPaola (P&G), Lisa Walker (Korn Ferry), José Rivera and Saemi Matthews (L’Oreal), Donna Giandomenico (Genentech), Craig Wheeler (Momenta Pharmaceuticals), and Cornell M&AE graduate Taylor Milner (Stroud Consulting).

CHAME 302 Nonresident Lectures

George W. Hobby, A.B. A&S ’38, B.S. ChemE ’39, keeps busy driving his wife where the wishes to go as well as watching his favorite TV programs. He frequently attends birthday parties of family members and good friends. He enjoys corresponding with his “old” Cornell friends. He writes, “At my 90-year-old age, I Luckily feel quite well and drive our Ford wherever we wish to go.” George has traveled extensively throughout his life, including to Holland, Germany, and Switzerland as well as up and down the Eastern seaboard of the United States. He vividly remembers the fraternity parties at Cornell (AXE), especially when the ladies were invited. He also recalls that he often played the piano during his years at Cornell.

CHAME 303 Nonresident Lectures

Jacques L. Zakin, B.S. ChemE ’49, the Helen C. Kurtz Professor Emeritus at Ohio State University, was inducted into the University of Missouri-Rolla (UMR) Academy of Chemical Engineers on April 19, 2007. The academy honors chemical engineers for their contributions to the profession, leadership, and involvement with UMR. The academy also serves as an advisory group to the UMR chemical engineering department. Jacques received his master of science degree in chemical engineering from Columbia University in 1950 and a D.Eng.Sci., Chem.

CHAME 304 Nonresident Lectures

John Wilkens, B.S. ChemE ’69, wrote to tell us that Robert Langer, B.S. ChemE ’70 (pictured), “made the news again, this time in a new role!” Last summer, Langer was chosen as a Medical All-Star to deliver the ceremonial first pitch at Fenway Park for the Boston Red Sox on July 28. He pitched a strike! Bob holds more than 600 issued and pending patents and has more than 900 research publications. In July 2006 he was honored by his colleagues at an anniversary Symposium “Celebrating Thirty Years of Robert Langer’s Science.”

CHAME 305 Nonresident Lectures

Michael C. Chen, B.S. ChemE ’71, joined Epicyte Corporation, a specialty pharmaceutical company, in June 2006 as its vice president for global business development. He has had a successful career in the life sciences industry, which spans more than 25 years and includes extensive experience in licensing and acquisitions, strategic planning, and technology development. Before joining Epicyte, Michael was executive vice president of sales and marketing at the Spyglass Group, a health care consulting firm. He has also served in management positions at Johnson & Johnson, Synaptic Pharmaceuticals, and Ciba-Geigy.

CHAME 306 Nonresident Lectures

Stephen L. (Steve) Matson, B.S. ChemE ’71, M.S. ChemE ’74, gave the John A. Quinn Lecture in Chemical Engineering at the University of Pennsylvania on March 28, 2007. He received his Ph.D. from Penn in 1979. His lecture, “Commercializing Membrane Reactors: From Penn to Pure-Isomer Drugs,” described the evolution of Sepacor, Inc., into a specialty pharmaceutical company with sales in excess of $1 billion per year and a market capitalization of $5 billion into a mid-cap specialty pharmaceutical company (e.g., Lunistar, Xopenex, Allega) with sales in excess of $1 billion per year. Steve is engaged in starting ConTechs Associates, Inc. (www.contechs.org), a nonprofit that executes engineering projects in developing countries through teams comprising engineering students and professors in those countries working collaboratively with U.S.-based volunteers. Steve is the recipient of AIChE’s Professional Progress Award and a fellow of the American Institute for Medical and Biological Engineering. In 1995 he was elected to the National Academy of Engineering.
**1980s**

**Ann L. Lee, B.S.** ChemE ’83, was elected to the National Academy of Engineering (NAE) in February 2007. Election to the NAE is among the highest professional distinctions accorded to an engineer. Ann was elected for her innovation and development of large-scale, cost-effective vaccines that have saved lives worldwide. She is vice president of process research and development at Genentech, Inc., South San Francisco, Calif.

**Maryam Golnaraghi, B.S.** ChemE ’84, went to Harvard where she finished a Ph.D. in physical oceanography after graduating with a B.S. in ChemE in 1984 and an M.S. in theoretical and applied mechanics.

After a two-year postdoctoral experience in oceanography and attending Harvard Business School, she started a company, Climate Risk Solutions, Inc. In 2004, she joined the World Meteorological Organization to head up an international program for disaster prevention and mitigation. Maryam is married with two young daughters.

**Chi-Chang Kao, Ph.D.** ChemE ’88, is the chair of Brookhaven’s National Synchrotron Light Source (NSLS) Department. Kao was named a fellow of the American Physical Society in 2006 “for his many contributions to resonant elastic and inelastic x-ray scattering techniques and their application to materials physics.”

During his research at the NSLS, Kao has developed new x-ray scattering techniques to study the electronic and magnetic properties of magnetic and strongly correlated materials. These techniques have led to better understanding of the earth’s interior and materials properties under extreme conditions. After receiving his Ph.D. from Cornell, Kao joined Brookhaven National Laboratory as a postdoctoral research appointment. Currently, he is an adjunct professor in the Department of Physics and Astronomy at Stony Brook University.

**1990s**

**Laura Baker (née Woeller), B.S.** ChemE ’95, was inducted into Cornell’s Hall of Fame in 2006 in the Robinson Hall of Fame Room in Schoellkopf Memorial Hall. In 1995 Laura was named the Cornell Senior Athlete of the Year by the Cornell Daily Sun. She was a four-time All-American and eight-time Heptagonal Champion in cross-country and track. Her varsity career included 12 seasons and more than 100 meets. After college, she continued to run competitively for a few years. Her dedication to and love of running led her to be sponsored by New Balance in the 2000 Olympic Trials. Laura is now married and has two sons, three-year-old Quinn and one-month-old Ian. She lives near Charlotte, N.C., where she works as a systems engineer configuring and purging Emerson control systems.

**Kelley Burridge, B.S.** ChemE ’96, is doing a postdoc with Morton H. Friedman, B.S. ChemE ’87, in his Cardiovascular Simulations Laboratory (CSL) at Duke University. Research in the CSL focuses on the relationships among the dynamics of arterial blood flow, the mechanics of the vessel wall, and the development of atherosclerosis. Kelley is using computational fluid dynamics, molecular imaging, and gene profiling to understand on the molecular level how fluid dynamic stresses affect the macroscopic permeability of the arterial wall.

**Christine Hewitt, B.S.** ChemE ’97, M.B.A. Grad Mgmt ’02, recently moved to Boulder, Colo., from Cambridge, England. Christine was promoted to director of finance for Amgen’s manufacturing facilities in Colorado. She enjoyed seeing her CHE classmates at reunion this past June.

**Eric Wannamaker, B.S.** ChemE ’98, is an environmental engineer at Gradient Corporation specializing in the fate and transport of contaminants in groundwater and surface water. Before joining Gradient, he had significant experience in the semiconductor manufacturing industry designing experiments, interpreting scientific data, and monitoring industrial processes. Eric received the 2007 Harold Jan Schoemaker Award given by the International Association of Hydraulic Engineering and Research (IAHR) to the authors of the published paper judged the most outstanding in the two years preceding the IAHR Congress. His winning paper, co-authored with Eric Adams of MIT, was chosen from over 140 submissions and investigates some of the basic practical and environmental concerns associated with the sequestration of carbon dioxide in the deep ocean.

Eric received his M.S. in environmental engineering from MIT where he was a National Science Foundation Graduate Research Fellow. Eric enjoys spending time with his wife, Kara (Martin), B.A. A&S ’97, and their dog, Sherman.

**Michael Haller, M.S.** ChemE ’98, was promoted to vice president, alliance management and portfolio

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**Homecoming**

Many ChE alumni came to Olin Hall after the Big Red Homecoming game against Colgate on Saturday, October 14, 2006. All had fun at the tailgate party hosted by the school in the Fred H. Rhodes Lounge.

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**Cornell ChEs Hold Annual Gathering in Philly, May 2007**

(left to right), kneeling—Drew Vogel and Vlad Shamritsky; standing—Jamie Musmacher, Andra Jones, Meghan Cuddihy, Ed Smith, Scott Strandberg, Tracy Ellsperrmann, Satch Sil, Mike Herberg, and Mike Myers
The School of Chemical and Biomolecular Engineering Advisory Council

The Advisory Council of the School of Chemical Engineering was created in 1981 to assist in the development and long-range planning for the rapidly growing school. To continue the tradition of excellence in professional programs while expanding graduate research programs, Julian C. Smith, then director of the school, asked representatives from industry and academia to join in giving the school “the guidance from knowledgeable people who have an interest in the quality of our future—and who can help us in charting our directions.”

Advisory Council members serve a three-year term and convene once a year, meeting with faculty and students of the School of Chemical and Biomolecular Engineering and administrators of Cornell University and the College of Engineering. This year’s meeting is scheduled for October 5 and 6.

Current Members

Rakesh Agrawal
Winthrop E. Stone Distinguished Professor
School of Chemical Engineering, Purdue University 2002–2007

Carol Boyd Amos (B.S. ChE ’79, M. Eng. ChE ’80)
Technology Manager—Process Engineering
DuPont Engineering 2006–2008

Tim Anderson
Professor and Associate Dean for Research and Graduate Programs
College of Engineering
Department of Chemical Engineering
University of Florida 2002–2007

Sam Bergh
Vice President
Engineering Symyx Technologies, Inc.
2006–2008

Bobby Brinei (Ph.D. ChE ’91)
President & CEO
MBI International
2007–2009

Juan de Pablo
Howard Curler Distinguished Professor, Chemical Engineering
University of Wisconsin, Madison 2002–2007

Kent E. Goklen (B.S. ChE ’79)
Senior Scientific Director, BioPuration Development

Martha Jones (Ph.D. ChE ’97)
Staff Reliability Engineer
Intel Corporation 2006–2008

Ronald Larson
Chair and G. G. Brown Professor of Chemical Engineering
Dept. of Chemical Engineering, University of Michigan 2005–2008

Alumni Notes (continued from previous page)

development, of Halozyme Therapeutics, Inc. Michael is responsible for managing key alliances, including execution of partnered programs for Enhance Technology, as well as overseeing the prioritization, planning, and execution of internal programs within Halozyme’s portfolio. Previous to his employment with Halozyme Therapeutics, Michael worked for McKinsey and Company, where he was a management consultant focusing on complex health care issues for Fortune 500 companies involved in branded and generic pharmaceutical, biotechnology, medical device, and payor/provider activities. He has helped clients with their most critical business and development, and sales and marketing functions. Michael has published many articles in peer-reviewed journals, has presented at numerous scientific conferences, and is a co-holder of multiple patents. He earned his B.S. with honors from the Johns Hopkins University and his Ph.D. in biomedical engineering from the Johns Hopkins University School of Medicine.

Steven Levine, Ph.D.
ChemE ’98, is a research associate with ExxonMobil Research and Engineering. He currently is in the Compositional Modeling group, which develops high-fidelity models of refinery unit operations. Steven and his wife, Justina, welcomed baby Ian Charles, into their family on September 22, 2006.

Hiroto Kiguchi, B.S.
ChemE ’99, is attending Jefferson Medical School in Philadelphia, Pa. He decided to make a career change as a result of his most recent battle with Hodgkin’s Disease in 2005. Hiroto feels he can make a difference in the medical community owing to his experience as a patient. His first battle with Hodgkins was in 1995, his freshman year at Cornell. The academic preparation he obtained as a ChemE student played an important part in his acquiring the position of senior engineer at Merck, working for the global Technical Operations group based in West Point, Pa. His group supports the manufacturing of Besagace, Stavamar, Bexomon, Singular; Emend, Janumet (new diabetes drug), and other products. It is the responsibility of his group to maintain and trouble-shoot the manufacturing process for these products on a daily basis. Outside of work, his wife, Bevan (ALS ’99), and he have been very busy with their newborn son (Kaz), but in his free time, Hiroto runs marathons, participates in triathlons, and raises money for and participates in Lance Armstrong’s LiveStrong Cherry Ride and the Multiple Sclerosis 150-mile ride. He volunteered at the Hospital at the University of Pennsylvania on the cancer floor where he was caring for and helped the nurses with patients. He also has been tutoring middle school students through the Merck Mentoring Program. Before the pregnancy, Hiroto and Bevan were very interested in salsa dancing.

2000s

Kristen Adams, B.S.
ChemE ’00, graduated from Rice University in May 2006 with a Ph.D. in bioengineering. She is currently a postdoc in radiology at Baylor College of Medicine in Houston, Tex., working on targeted molecular imaging for cancer within the lymph nodes. She received a three-year postdoctoral fellowship to pursue her research from the DOD, which she accepted, and another from the NIH, which she had to turn down, and received a research award from the Golfer Against Cancer. Kristen finds the work interesting, especially being a part of the clinical imaging team currently working on three clinical trials.

Eric Johnson, B.S.
ChemE ’00, is working for Batele in Columbus, Ohio. He enjoys working with his group, Applied Biology and Aerosol Technologies, and says the projects have been mostly enjoyable to work on. Eric enjoys hiking but says “the trails still have nothing on those in the Finger Lakes and the Catskills.”

Dina Agrapides, B.S.
ChemE ’01, is a product development systems engineer for Cordis Corporation, a Johnson and Johnson Company, in Warren, N.J.

Christopher DiMarco,
B.S. ChemE ’01, was married August 12, 2006, to Illyse Dobrow, a graduate of Yale University. In May 2006, Chris received an M.B.A. from Columbia University. Currently, he works for Ethicon, a Johnson & Johnson company, as a financial management associate.

Fazeela Abdul Rashid, B.S.
ChemE ’01, is currently a principal at Solera Capital, a private equity firm in New York City, which she joined in 2006. Before that, she pursued her M.B.A. at Harvard Business School and graduated in 2006. Before her M.B.A. studies, she was an investment banking analyst in the health care group at Credit Suisse. Fazeela was back at Olin Hall on March 26 to conduct a CHEM 301 class on a nontraditional career path with a chemical engineering degree.

David Britton, B.S.
ChemE ’02, worked at Amgen in southern California as an engineer in global process engineering providing technical support for commercial protein purification. The desire to return home to the mountains and a great opportunity within the company led to his relocation to Colorado in May. David is now in the New Product Commercialization and Product Engineering group working on technology transfer. He can be contacted at britton@amgen.com.

Jennifer Carr, B.S. ChemE ’02, recently received her M.B.A. from the Columbia University. She feels the M.B.A. was a perfect complement to her engineering degree because it gave her an understanding of the business world and how to be successful in an increasingly global marketplace. Upon receiving her M.B.A., Jennifer travelled to London and Paris to celebrate her accomplishment. She has a new hobby, scrapbooking, by which she is capturing the memories of her trip.

Amanda Garrshah (née Richards), B.S. ChemE ’02, recently returned to the Boston area from Tokyo, where she worked as an environmental specialist for JGC Corporation and listened to some great stories about a certain former Caltech employee. She will be pursuing an environmental consult with Environmental Resources Management (ERM).

Charles Heffernan, B.S. ChemE ’02, is a senior process engineer with GlaxoSmithKline in Conshohocken, Pa. He attends law school at Temple University, where he will be entering his second year. He and his wife, Jesse, enjoyed a trip through the Negev during a recent visit to Israel.
Max King, B.S. ChemE '02, recently finished in eighth place in the USATF Outdoor Championships in Indianapolis in the 3000m Steeplechase in 8:33. He has competed in the championships for the past two years as well as in multiple other cross-country and road racing USA championships. In 2006 he qualified for the World Cross Country Championships in Japan. Max and his wife, Dory (née Koehler), B.S. ChemE '02, have been living in Bend, Ore., as well as in multiple other ships for the past two years. Dory just passed the PE test and is enjoying working in solid dosage forms. They have no children yet, just a dog.

Jonathan Lu, B.S. ChemE '02, is working for Procter & Gamble as a senior engineer in material development. Jon recently moved back to Cincinnati from P&G’s Latin American headquarters in Caracas, Venezuela. He enjoys international travel.

Kyle Mork, B.S. ChemE '02, has been promoted from eastern division drilling manager to vice president for eastern operations for Energy Corporation of America in Charleston, S.C. Previously, Kyle worked for Halliburton Energy Services.

Andra Jones, B.S. ChemE '03, is a consultant with Accenture in Philadelphia. She is currently working for the non-profit arm of Accenture to provide a strategic IT assessment for a nonprofit organization for the cities of Washington, D.C. and Bolivia. Some of Andra’s hobbies are volunteer- ing, traveling, and playing volleyball with other Cornell ChEs.

Mike Myers, B.S. ChemE '03, ME ChemE '04, works for an engineering design firm, Mustang Technologies, Inc., in Tampa, Fla., as a process engineer. Since he joined Mustang, the majority of his large projects have been for refining-related companies in the Middle East, but he has also done some work on smaller projects for various chemical and design companies in the United States. Mike states, “Though I loved my time at Cornell, we do get a lot more sun down here than back in Ithaca!”

Saratj “Satch” Sill, B.S. ChemE '03, ME ChemE '04, is working for ACS (Automation and Control Specialists), and his current project is at Merck in Philadelphia.

Andrew Vogel, B.S. ChemE '03, is taking a leave of absence from ExxonMobil and has enrolled in Harvard Business School full-time this fall to pursue his M.B.A.

Christopher Burk, B.S. ChemE '04, ME ChemE '05, is a research engineer with Eltron Research and Development in Gunbarrel, about 10 minutes north of Boulder, Colo. Eltron is a small business dedicated to research and development, primarily in the energy, petrochemical, environmental monitoring and remediation, defense and aerospace industries. Chris is working on the development of a reactor for reforming diesel fuel to syngas using some new membrane and catalyst technology. Last October he took a climbing trip to Indian Creek, Utah. He climbed the SuperCrack of the Desert, one of the most famous climbs in the country.

Lauren Macri, B.S. ChemE '04, was working on a research project at Regeneron Pharmaceuticals after graduation. After two years in industry, she has returned to academia as a graduate student. Lauren is presently a second-year Ph.D. candidate at SUNY Stony Brook and is doing her research in the lab of Richard Clark. They are studying the mechanism of collective cell migration in chronic wounds and are working on an acellular matrix to accelerate cutaneous wound healing. Lauren hopes to gear her research toward the development of a therapeutic for diabetic foot ulcers.

Serena Schlake, B.S. ChemE '02, works for the Clorox Company in the Tech Center in Pleasanton, Calif. Serena first worked as a product developer. Last year she developed a new product: Hidden Valley Organic Ranch. She is now in process development working on the scale-up of the company’s food products.

Meghan Cuddihy, B.S. ChemE '03, ME ChemE '04, is pursuing Ph.D. studies at the University of Michigan (with Mike Senra, B.S. ChemE '03) working on 3D in vitro liver cultures for potential drug testing applications. She has become increasingly interested in developing innovative ideas and technologies into potential businesses, and has been successful in several business plan competitions. Her hobbies are running, traveling, and visiting the CHE '03s in Philadelphia whenever I can.”

Tracy Ellispermann, B.S. ChemE '03, is still living in the Philadelphia area—working for Merck in pharmaceutical manufacturing as senior supervisor/scheduler. In the past year, she assumed responsibility for daily scheduling in addition to supervising technicians in two manufacturing departments. She has learned much about union and labor relations, human resources, and lean manufacturing along the way. This past summer, Tracy worked with Cornell ChE rising junior Corey Broton, who was an intern in her department. She recently bought her first home and had the help of several ChE ’03 classmates during the move. Cooking, rec sports, traveling, and the occasional night out salsa dancing keep her fairly busy, and she says, “Luckily, I get to see plenty of ’03 classmates every day.”

Mike Herberg, B.S. ChemE '03, is working and living in Philadelphia as a process automation engineer for ACS (Automation and Control Specialists). His current client is OSI Biologics in Marietta, Pa.

Eugene Chang, B.S. ChemE '05, is working for Jacobs Engineering in Mount Laurel, N.J. He previously worked on a process engineering team for a $5 billion crude oil expansion project for Motiva Enterprises in the Port Arthur, Texas, refinery. Eugene mainly used Excel and industry standards to design work and said he learned things that you don’t really learn in school regarding line sizing specifications, valves, and pumps. He is currently back in New Jersey doing relief valve and heat exchanger work for a company called Cytec. Most of the work has been service level, but he is looking forward to the more complex and technical areas that he has yet to touch on. He is excited for another opportunity to show the Jacobs people how Cornell ChEs are leagues above the rest.

Eric Foote, B.S. ChemE '05, is attending medical school this fall. Last summer he was at Stanford doing research with a civil engineering professor on coastal water quality. Eric has traveled extensively this past year, passing through China (Fish Tail Mountain, pictured), and is enjoying working in solid dosage forms. They have no children yet, just a dog.

Current Members (continued from page 14)

A. Y. Noojin III (B.S. ChE ’69)
Past President and CEO
Shell U.S. Gas and Power
2002–2007
President of the council 2005–2007

Dennis C. Prieve
Gulf Professor of Chemical Engineering
Dept. of Chemical Engineering, Carnegie Mellon University
2002–2005

Charles M. Shafran (B.S. ChE ’70, M.Eng. ChE ’71)
Vice President, Strategic Planning, Global Manufacturing
Pfizer Inc.
2004–2007

Eric S. G. Shaqfeh
Professor of Chemical and Mechanical Engineering
Institute for Computational and Mathematical Engineering
Stanford University
2000–2008

Jefferson W. Tester (B.S. ChE ’66, M.S. ’67)
H. P. Meissner Professor of Chemical Engineering
Department of Chemical Engineering
Massachusetts Institute of Technology
2000–2008

Retired from the Advisory Council in 2006

At the 2006 Advisory Council Meeting, we thanked Robert A. Ganz, B.S. ChE ’69, M.S. ChE ’70, retired from ExxonMobil, for service on the council 2000–2006; Robert A. Ware M.S. ChE ’79, Rohm and Haas Company, 2001–2006; and Matthew V. Tirrell, University of California, Santa Barbara, 2001-2006.

New to the Advisory Council in 2007

We welcome to the Advisory Council Bobby Brinigi, Ph.D. ChE ’91, president and CEO of Michigan Biotechnology Institute in Lansing, Mich., and Eric S. G. Shaqfeh, professor of chemical and mechanical engineering at the Institute for Computational and Mathematical Engineering, Stanford University. We also welcome Ignacio E. Grossmann, Rudolph R. and Florence Dean University Professor, Department of Chemical Engineering, Carnegie Mellon University, who will begin his service in 2008.

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Advisory Council Departures

Gus Noojin (B.S. ChemE ’69) steps down from the Advisory Council this year after serving for six years, 2002–2007, as president for the last three. Noojin retired as president and CEO of Shell US Gas & Power in 2004. During his 35 years at Shell, he held a wide variety of technical, operating, and executive posts. He served as a director on the boards of Shell Oil Co., Shell Petroleum, Inc. and Enterprise Products Partners (NYSE: EPD) as well as the boards of a number of Shell joint ventures. At various times during his career, he was responsible for multi-billion dollar acquisitions and divestments as well as leadership of major change initiatives. Since retirement, he has been involved in community service with a focus on the education and development of young people. But he won’t be “retiring” from Cornell service: next year, Noojin will head the College of Engineering Alumni Association’s 2008 conference focused on energy.

Thank you, Gus, for your leadership of the CBE Advisory Council and for your assistance in the development and long-range planning for our rapidly growing school.

Lisa Skeete Tatum (B.S. ChemE ’89), a co-founder of the venture capital firm, Cardinal Partners, was due to begin service on the Advisory Council in 2007 but her service has been changed to a higher calling. Tatum has been elected to the Cornell Board of Trustees and will be assisting the strategic development of university-wide projects.

At Cardinal, Tatum focuses on investments in health technology and devices. She has led the firm’s investments in AthenaHealth, AllianCeCare, AxxoGen, IPNI, MitralSolutions, Nexcura, Parkstone, and TechRx. Before joining Cardinal, Tatum worked for Procter & Gamble in various global and functional roles including product development, and long-range planning for our rapid growth and development of medium-sized consumer products companies. Tatum received her M.B.A. from Harvard Business School.

Ying Jiang, B.S. ChemE ’05, is in California at Stanford University. She has joined Zhenan Bao’s group and will be working on synthesizing new polymeric materials for organic photovoltaic applications. It has been an interesting change from the naturally carved majesty of Cornell’s landscape to the flat, brilliantly colorful gardens of Stanford, though she enjoys both campuses enormously. Doing graduate work at Stanford is a great intellectual challenge. She learns something new every day and enjoys the intellectual and cultural diversity and exchanges that occur at an institution such as Stanford.

Ann Kim, B.S. ChemE ’05, ME ChemE ’05, is a process development engineer in the Media Development Group of PMPD (Preclinical Manufacturing and Process Development) at Regeneron Pharmaceuticals. She has been with the company since July 2006.

Elina Slavin, B.S. ChemE ’05, is attending Seton Hall Law School part-time this fall. She is currently working for Symrise as the sales manager/applications engineer for the Velcorin Business Unit. Elina’s main job is to help start up this new unit. This role demands that she travel frequently to meet with customers, make presentations, and assist with plant trials and start-ups. Elina enjoys her present job but feels a J.D. will help her in future opportunities. She will continue to work for Symrise as she attends law school.

Preclincial Manufacturing and Process Development (PMPD) department. He is currently working with Sue Kim, B.S. ChemE ’05, ME ChemE ’05, and Ann Kim, B.S. ChemE ’05, ME ChemE ’05.

Kaitlin Mallouk, B.S. ChemE ’05, is pursuing an M.S./Ph.D. in environmental engineering at the University of Illinois at Urbana-Champaign. She recently left a position at Merck & Co., a biochemical engineer to return to school full time. She and fellow Cornellian Seth Watts, B.S. MechE ’06, have just bought their first home and are looking forward to sharing it with a new dog, Maeve.

Laura Fabry, B.S. ChemE ’06, works at Pepperidge Farm in Norwalk, Conn., as a process engineer. Her job involves traveling to Pepperidge Farm manufacturing plants to produce new snack products. Laura supports both cookies and crackers, but is especially excited to be supporting her favorite Goldfish brand. Lindsay Bridenbaker, B.S. ChemE ’08, was a fellow Cornellian in her department who worked a short period of time with Laura. Laura thanks Professor Clancy “for making us write all those memos in CHEM 301. I write memos at least once a week and it’s great to start out feeling confident about my writing skills.”

Alumni Notes (continued from previous page)
Robert F. Leslie, B.S. ChemE ’06, worked for the Democratic Campaign Management Program. He worked in the Louisiana 3rd district for Charlie Melancon’s reelection campaign for Congress. He loves politics but says the hours are long. After the successful campaign, he started working for Arcadia Solutions in Boston, Mass. It is a small consulting firm with two main areas of business—sales compensation and health care. He works on the health care side of the business and is enjoying being back in the Northeast.

Yang Lu, B.S. ChemE ’07, is working for Planisware, a project management software company in San Francisco, as an associate consultant. The company develops enterprise and collaborative project management software for pharmaceutical and new product development companies. Yang is greatly enjoying his job and the San Francisco area.

Diane Wuest, B.S. ChemE ’06, traveled around Southeast Asia with fellow ChemE 06 graduate Katie Eng, after graduating last year. In August she moved to San Francisco, Calif., to work for Genentech, Inc. in the BioProcess Development department. She is an associate engineer in the Late Stage Cell Culture group, where she is developing an efficient and robust commercial cell culture process for an anticancer drug. In her free time, Diane is taking advantage of all that northern California has to offer.

Michael Rapawy, B.S. ChemE ’06, is currently working for an IT/business consulting company called Arcadia Solutions in Boston, Mass. The company, started by a Cornell graduate, is focused on incentive plan strategies and implementations in large corporations and currently creating a new asset to improve Electronic Medical Record (EMR) implementation into hospitals and other health centers. Michael travels often to Long Island for one of his clients, Computer Associates, and is currently co-leading a newly formed partnership with Oracle. Pictured here is Michael (second from left) with three co-workers in the Bahamas on a short weekend trip.

Raluca Scarlat, B.S. ChemE ’06, is at the University of California—Berkeley attending graduate school in nuclear engineering. Previously, she worked for ExxonMobil Research and Engineering in Fairfax, Va. Her assignment was in the area of Abnormal Event Detection (AED) for chemical and refinery processes operation. Raluca was awarded a Leadership Award for her initiative to improve the modeling methodology of the AED tools.

We are sad to note the passing of several alumni this past year. They remain alive in our memories.

Kuo-su E. Chang ’87, Ph.D. ’91, January 1, 2007, Mooresville, N.C.
Davidson Clark ’50, July 9, 2007, Alton, N.H.
Walter H. Gloor ’51, September 8, 2006, Dayton, Ohio
Thomas J. Gorman ’50, April 7, 2006, Monmouth Beach, N.J.
Donald P. Keel Jr. ’63, September 3, 2006, Frederick, Md.
T. Irvine (“Irv”) Kennedy ’42, October 12, 2006, Houston, Texas
James M. Meyers ’41, September 11, 2006, Chatham, N.J.
Richard E. Moulton ’50, November 20, 2006, Piscataway, N.J.
Robert L. Reed, Sr. ’54, November 29, 2006, The Woodlands, Texas
Paul V. Roberts ’66, February 12, 2006, Cupertino, Calif.
Andrew R. Schafer ’58, July 25, 2006, Missouri
James M. Wiegandt, Bob Vonberg, and Peter Harriott on the Cornell desalination process with emphasis on computers. Professor Leinroth worked with Professors Herb Wiegandt, Bob Vonberg, and Peter Harriott on the Cornell desalination process by freezing. He was also a visiting professor at MIT. He set up his own consulting business upon retirement and worked past his 80th birthday as an advisor on engineering process design. During that time, he also was a visiting professor at the University of Connecticut as well as being involved with the MIT Department of Chemical Engineering practice school programs in Colorado and California. He was a great teacher and will be missed by many at Cornell.

Clara H. Rosevear, A&S ’38

We are saddened by the death of Clara H. Rosevear on April 4, 2007. Clara was the daughter of Professor Frederick Hoffman “Dusty” Rhodes Ph.D. ’14, founding director of the School of Chemical Engineering. Clara and her husband, Robert “Bob” Rosevear, have been major benefactors of the school for the past 30 years. Clara married Bob Rosevear (’37 A&S) in 1939. After graduating from Cornell University, Bob later received bachelor’s and master’s degrees in music from the University of Rochester and a doctor of music honoris causa from the University of Western Ontario. He spent the bulk of his career as a professor of music education at the University of Toronto where he was involved in a wide variety of national music education programs. Bob and Clara stayed connected with their respective Cornell classes and the university. For many years, Bob has served as the class correspondent and Cornell Annual Fund representative for the Class of 1937.

In 1976, Clara’s mother established the Fred H. Rhodes Memorial Endowment for Scholarship in Chemical Engineering in honor of her late husband. Clara and Bob’s generosity has provided support for 31 graduate students in the past five years—a wonderful achievement. Their fund provided full support for 11 graduate students and 10 for one semester. Ten others received support to supplement fellowships. The Rosevears’ generosity has also provided support to several other areas at the university including: the School of Chemical and Biomolecular Engineering and its Industrial Practitioner Program and to renovations in Olin Hall. They also supported the Lincoln Hall Renovation and Expansion Project, Cornell Plantations, the Cornell Library, the Class of 1937 Cornell Tradition Fellowship Fund, the Cornell Annual Fund, the Class of 1937 Center for Environment, and Cornell United Religious Work (CURW). For the Rosevears’ generous support and involvement, they were honored in 1988 as Foremost Benefactors of Cornell University. Clara was a wonderful woman. If she knew that we had urgent need for financial assistance, she came through for us. We will miss her greatly, and our hearts go out to Bob for his loss.
The capstone courses Unit Operations Laboratory and Plant Design help our students make the transition from engineering science to engineering practice. This transition has been a feature of the chemical engineering program at Cornell for several years, and I doubt that anyone reading this newsletter and remembering their days on the Hill would disagree with the benefits provided by these courses.

We receive excellent feedback from our graduates on the positive effect these courses had on their education and their ability to produce after graduation. In the spirit of continuous improvement we modify these courses every year to incorporate new and more relevant technologies while teaching the same principles in the new context.

So what have we done recently?

Unit Operations Lab

We have added experiments in liquid/liquid extraction and Michaelis-Menten kinetics and discontinued the membrane air separator experiment. With more and more students interested in biological applications of chemical engineering we felt that an experiment dealing with bio system kinetics would be a good addition. An unexpected benefit of this experiment was that the students’ reactor designs for the bioprocess design projects in plant design showed a marked increase in comprehension and approximation of reality.

Through the good offices of Sartorius and Peter Makowenskyj, B.S. ChE ’04, M.Eng. ’05, we recently acquired a bench scale ultra-filtration system. One of our students has been operating the system as an M.Eng. project, and we hope to introduce it into our curriculum in the fall. The system will replace the liquid/liquid extractor experiment, which proved a bit too prone to forming emulsions to make it reliable.

Another educational experiment this fall is to eliminate the stripping lab and instead devote the second half of the semester to the operation of the distillation column with the idea of conducting several performance test runs to better characterize the capabilities of the column and its auxiliaries. The students will use the information obtained from these test runs to recommend to a fictional client whether to run the column to maximize throughput or maximize purity based on a pricing scenario that will be provided to them.

Plant Design

Many of our projects now focus on the energy industry. The design work we do is in support of a feasibility study for a particular product. This year, Matt DeLisa and Jeff Varner managed projects in which liquid fuels are made from renewable resources. Their groups investigated making ethanol and/or n-butanol from several different feedstocks including corn, switch grass, waste newsprint, and municipal waste.

Andrew Hunter’s groups investigated converting gas from underground coal gasification into pipeline-quality methane.

Bob Ferguson’s teams looked at decomposition of MTBE and dimerization of the resultant iso-butene to iso-octene.

Students in Brad Anton’s group evaluated the production of styrene. Two teams worked in tandem, one making ethyl benzene and the other converting the EB to styrene monomer. Next year we will replace the EB/styrene project with one that studies pentane/hexane isomerization as a way of meeting newer, more stringent gasoline specifications.

Many alumni help support this course. John Carberry B.S. ChE ’64, M.S. ChE ’65, gave a lecture on environmental health and safety (EHS) issues and stayed on to review these issues with each group. We had a fresh-eyes review midway through the course with onsite help from Bill Cleary B.S. ChE ’86 (Corning), Kent Göklen, B.S. ChE ’79 (Merck), and Jim Staid, B.S. ChE ’65, M.Eng. ’66 (formerly at Exxon). EB/Styrene reviewers Tom Dill, B.S. ChE ’64 and Lowell Youngquist, B.S. ChE ’71, were too far away to make the trip so they did their work via teleconferences. The input from all of the reviewers was well received by the students and we will make the review a regular feature of the course.

During the last week of the course, Bob Ganz, B.S. ChE ’69, M.S. ChE ’70, listened to a sampling of the final presentations to provide a calibrating sounding board to equate across groups.

You were introduced to Andrew Hunter in last year’s publication, but you may not recognize the name Bob Ferguson. He is an old friend and colleague from Caltex days who has been using up his long service leave from his job in Australia to serve as a manager for the design course and also to act as a “voice of experience” for all of the students. Ferguson (pictured at right) is an invaluable resource who thinks Ithaca is gorgeous as well as “gorges.”
From Engineering Science to Engineering Practice

(continued from previous page)

We look forward to having him here again as often as his other commitments allow.

Brian Earl will take over Ferguson’s duties next year. Earl is the former head of the Chemical Engineering Department at Canterbury in New Zealand. He has a fair amount of hands-on experience and will bring a great deal to the course.

At this point you may be asking yourself, “What on earth propels all these people to participate in this course?” The answer is: great students. Our students are bright, interested, and engaged and they soak up knowledge like a sponge. To be part of the process of converting them into more knowledgeable and better-prepared engineers is truly rewarding, and once you’ve been involved it’s hard to stop at once.

Then...

The Senior Banquet was held on Tuesday, May 12, 1953, at Taughannock Farms.

Now...

The Senior Dinner was held on Thursday, May 3, 2007, in the Biotechnology Building.

Team Ezra

Two Cornell Chemical Engineering undergraduates placed second in the North American phase of this year’s L’Oreal Ingenius Contest, just beaten by a team from the École Polytechnique Montréal. The contest was held at the L’Oreal plant in Clark, N.J., on January 12, 2007. The team of Jennifer (Jenna) Rea (above, left) and Nimil Sood (center), both ChemE ’08, and Anjana Rajan, ORE ’08, worked for 10 weeks on an industrial engineering project supported by a L’Oreal technical manager. The L’Oreal Ingenius Contest is an international contest for engineering students aimed at providing students with real-life project experience with L’Oreal management in a competitive setting. More than 130 students from six countries took part this year.

Jenna Rea and Nimil Sood (ChE ’08) Take Second Place in 2006 L’Oreal Ingenius Contest

(left to right): Betty Jiang, Professor Ferguson, Kim Lyle, and Christine Tuminello

(left to right): Jenny Cipolla, Mike Strenk, Kristal Ramjeet, and Debby Yanes

Nithya Jesuraj presents the mock award “Least likely to answer a question without responding, ‘What do you think?’” to Professor Center.

October 2007 • Olin Hall News
Work Continues on “Bender,” Cornell’s Chemical Car

The AIChE student chapter at Cornell continues to make progress in developing a competitive chemical car.

A team of 29 undergraduate students consisting of 3 seniors, 11 juniors, 8 sophomores, and 7 freshmen is now engaged in this novel competition in which a car, the size of a radio-controlled toy, is powered solely by a chemical reaction. The goal of the competition is not speed—and indeed this seems not to be much of an option—but to travel a pre-set distance as close as possible to the finish line. The distance to the finish line ranges from 50 to 100 feet and is determined only minutes before the competition, requiring fast computation from the students.

At nationals, held during the AIChE annual meeting, more than 35 schools competed. Yang Lu’s report from nationals reads:

“At the first stage of the competition (checkpoint), poster judges and safety officers check the amount of work the students spent on the car and design of the poster, and determine how safe they deem the vehicle. The Cornell team passed the poster competition even after careful prodding and examination by the safety officers. Our car is a pressurized vehicle, so the safety officers were especially concerned about the existence of a safety relief valve (and calculations), whether or not we hydraulic-tested the vehicle; they asked the maximum allowable operating pressure of our design and how our entire system is rated above that pressure. The safety officers considered one of the school’s cars to be unsafe and disqualified it. The second stage of the competition was the actual “race.” On Cornell’s first run, the car did not move due to a discrepancy in our catalyst: the MnO₂ particles provided at the competition were much smaller than the particles used in our laboratory; therefore, we experienced less surface area during our initial run, and not enough O₂ gas was produced fast enough. On the second run, we added much more catalyst and created the necessary surface area for contact, and our car traveled a total distance of 15 feet. The winners of the competition, the University of Puerto Rico, came within 14 inches of the designated distance using a fuel cell design.”

The 2007 season features a qualifying round of regional competitions. This year, regionals were held at Northeastern University in March where Cornell competed against Northeastern, RPI, and Clarkson (which brought two cars). Cornell’s new car, dubbed “Bender,” was our first attempt to use a fuel cell design. Bender managed to travel only 3 feet in two minutes. But this was good enough to qualify for nationals; both of Clarkson’s cars were disqualified for failure to come to a stop within two minutes. Yang Lu did an excellent job as team captain, increasing the size of the team and organizing members in a way that promoted enthusiasm for the project and delegated increased responsibility to smaller sub-teams. The team’s collective effort was responsible for producing creative new designs for the car, ably assisted by Ka Yip and Daniel Lee (who were elected co-captains for 2007–2008) and by Ariel Waitz who, among his many talents, is a photographer for the Cornell Daily Sun. Professor Brad Anton is the car’s regular faculty advisor, but Professor Jeff Varner ably substituted in San Francisco, including attending an overly protracted AIChE safety meeting.

How you can help: The team would love to have a financial sponsor. Annual costs are around $5,000–$6,000.
Seventy-eight bachelor of science degrees in chemical engineering were awarded during our school’s diploma ceremony on Sunday, May 27. Approximately 650 undergraduate and graduate students, relatives, friends, and faculty attended the ceremonies and luncheon. People traveled from around the country and around the globe to celebrate the big day.

The undergraduate diploma ceremonies were presented in two lecture rooms to accommodate the large number of students and guests. Families and guests of the graduates enjoyed a slide show of photographs taken over the course of four years by fellow classmates as the graduates arrived from Schoellkopf Field. Professor Clancy began the ceremony on the first floor with a speech that asked the graduates to dedicate themselves to a life of service to their profession, their family and community, and to the country. Meanwhile, Professor Duncan opened the second-floor presentation by describing the design course and teamwork involved in the projects. The faculty presenters, Professors Anton, DeLisa, Center, Ferguson, Hunter, and Varner, announced each person and noted the project team contributions as the group posed for photos with their diplomas in hand. The senior capstone design course groups were then congratulated for their presentations in renewable fuels, ethylbenzene and styrene, methane from coal, and iso-octene projects.

Of the Class of 2007, a large number—38 percent—are continuing their studies in graduate school: eight graduates will begin chemical engineering Ph.D. programs and seven are pursuing other Ph.D. degrees in biologically oriented programs: biomedical engineering (3), bioengineering (1), biomedical sciences (1), food science and enology (1), and one in an M.D./Ph.D. program. Four of our graduates will start medical school. Seven will join our M.Eng. program in the fall; two others will enter the biomedical engineering M.Eng. program at Cornell. One is pursuing a master's degree in food science at Cornell and another will attend Dartmouth College to complete a master's degree in engineering management.

Just over half the class (51 percent) accepted employment at 27 different companies. The largest employers were Air Products (3), Automation Control Specialists (3), Genentech (3), Merck & Co. (3), Kraft Foods (2), and Procter & Gamble (2). The average starting salary was $60,750. These recent graduates are employed in the following areas: chemicals (5), consulting/engineering (4), consumer products (5), electronics and semiconductors (2), finance and investing (2), food products (4), petroleum products (6), pharmaceuticals (7), U.S. government (1), utilities (2), and research and development (1).

Eight students were still seeking employment at the end of May, but most reported having found a job during the summer.
Twenty graduate students in CBE participated in the school’s graduate diploma ceremony on Sunday, May 27. Twelve students received master of engineering (M.Eng.) degrees and eight received doctor of philosophy (Ph.D.) degrees. In total, nearly 100 friends, family, and members of the faculty joined us for the celebration.

We were delighted to welcome family and friends who had traveled from as far away as India, Italy, Nigeria, Mexico, Hong Kong, South Korea, and Canada to celebrate this important day in the graduates’ lives. The diploma ceremony opened with a welcoming speech by Professor Fernando Escobedo, director of graduate studies. The thesis focus and scientific accomplishments of each M.S. and Ph.D. graduate were then described by the student’s faculty advisor. A champagne brunch for advanced degree holders and their families followed the ceremony in a tent outside Olin Hall.

Our graduate students will be moving on to positions in industry and academia.

A sampling of destinations of our M.Eng. grads includes:
- Schlumberger, New Mexico
- IBM
- ZS Associates, New Jersey
- Raytheon, Arizona
- ExxonMobil
- Shell
- Anderson Consulting (Singapore)

Our Ph.D. grads are joining a variety of companies and laboratories:
- Risoe National Lab, Denmark
- Symyx Technologies
- Genentech
- Royal Dutch Shell Company
- Medimmune Vaccines
- Intel
- IBM

Others are taking up postdoctoral positions at the University of Pennsylvania, Institute of Human Virology, and Princeton University. One student will be a research technologist for Metglas Conway in South Carolina.

Profile: Graduate Degree Class of 2007

Some members of the M.Eng. Class of 2007. Left to right: Jay Park, Joseph Spinelli, Hakeem Yusuff, Tanya Chaturvedi, Matthew Ng, Liwenny Ho, Arturo Lo Gullo

Intel Donation Transforms Graduate Computing

Beginning in 1996, when Brad Anton spent his first of several summers at its Portland plant, Intel Corporation has generously supported the School of Chemical and Biomolecular Engineering with gifts of computing equipment. In 2002, Intel’s gift created a new graduate computing cluster of workstations to complement those in the Intel “Grad Lab.” Donations in the intervening years have continued to keep the grad lab current. This year, Intel donated nearly $60,000 worth of computing resources to the school. This includes five new Core Duo dual processor machines (i.e., 20 processors), which tripled the cluster’s resources for graduate research. This large jump in cycles is made possible by the high speed of the new Intel processors. The resources also doubled the memory in each of the existing cluster members, which has increased the efficiency of some codes by a factor of up to 20, and replaced all the monitors in the grad lab by new flat screen displays. Intel also provided a laptop to each of the 15 incoming Ph.D. students. We started offering laptops as part of our recruitment package to potential Ph.D. students in 2006, and our marketing survey suggested that this was an effective tool in the highly competitive search for the top students. This incentive costs us nearly $12,000 a year and would be beyond our means without Intel’s support. Since the hiring of Tim Weldon in 1980, the school has provided Intel with at least one employee a year. Most recently, Mohit Haran, Ph.D. ’07, joined Intel’s photolithography facility.

We are grateful to Kimberly Sills, Intel’s higher education program manager for Cornell, Martha Jones, and Mike DeAngelis for their continued support of our computing needs.
Corporate News

Shell Outreach Program

During spring break 2007, ChEs Matt Dumouchel ('07), Richardson Killis ('09), and Aaron Nelson ('09), together with Dawn Saepia (BEE), and Chao Shi (EAS) spent several days at the Shell Offshore Operations Training Facility in Robert, La. The group was chaperoned by Professor Al Center.

The training sessions are part of a Shell outreach program to expose college students to the many facets of offshore oil and gas production. The Cornell group was one of several university groups in attendance. The students slept in accommodation modules, are in the platform dining hall (pie and ice cream were available 24 hours a day), and used other facilities similar to those that would be found on an offshore rig platform.

The teaching part of the facility includes a large number of retired items of oil field equipment suitably cut away to show the internals of the equipment. There are a number of production-related exhibits such as a producing tubing string complete with sand screens and packers, and working blowout preventers. There is a drilling platform simulator on-site that the students operate to give them a feel for what the driller experiences when sinking a well. The four-day program included a day devoted to exploration, production, surface facilities for oil and gas conditioning, and safety. The safety day included a simulated helicopter ditch in the ocean (swimming pool) and extrication from the submersed chopper. So, in addition to knowing a lot more about exploration and production for oil and gas, all of the students are now qualified for overwater flight.

We are very grateful to Shell for providing the opportunity to participate in this program, as well as the funding to cover transport to and from the Training Center and the training fees.

ChE Alum Makes Lithium Discovery

Professor Neil Ashcroft (Physics, Cornell) wrote to us that in a plenary lecture at the annual meeting of the Finnish Physical Society this year it was announced that the element lithium had been discovered to be a superconductor at the extraordinarily low temperature of 0.4mK. This seems to be a world record low for superconductivity, but, more to the point, it’s the value that Clifton (Cliff) Richardson, an M.S. ChemE ’91 graduate of the Clancy group, came up with in a mammoth calculation, in 1997. Richardson completed a Ph.D. with Ashcroft at Cornell in 1995 and now lives in St. Paul, Minn.

Please consider designating your planned gift to Cornell to benefit the School of Chemical and Biomolecular Engineering at Cornell University. Your trust, bequest, annuity, gift of retirement assets, or other planned giving arrangement can provide:

- income for life for you and/or someone else,
- freedom from capital gains taxes,
- satisfaction from knowing that your legacy will help keep Chemical and Biomolecular Engineering strong at Cornell.

Far Above...

THE CAMPAIGN FOR CORNELL

Please contact us at 1-800-481-1865 e-mail: gift_planning@cornell.edu

Cornell University Office of Trusts, Estates, and Gift Planning

The Cayuga Society Honoring those who have established a planned gift for Cornell Over 4,000 members
Staff News

Belinda Floyd gave birth to twins Kody and Kaitlyn on December 18. They “have been growing like weeds!” and are keeping their mom and dad—who enjoy every moment—very busy. Congratulations to Belinda and James!

Sue Shipman joined the staff in December as an Accounts Rep III replacing Brandy Lobdell, who took a position at the Payroll Office.

We are sorry to say goodbye to Leila Choe, Heather Roman, and Brenda Werner, who left this past summer after working as research support staff in Kelvin Lee’s lab. We wish them all well in their new positions.

CBE School Holds Hooey Staff Appreciation Day

In honor of the Austin Hooey gift to the School of Chemical and Biomolecular Engineering, Director Paulette Clancy sponsored a staff appreciation day on June 21. CBE staff members visited the Seneca Lake Wine Trail and enjoyed lunch.

CBE Faculty, Staff, and Students Have Fun at Annual Picnic

The 2006 CBE Annual Picnic was held September 1 at Stewart Park. Seated at the picnic table are (from left) Matt Marrichi (grad) with friend, Brian Pasquini (grad) with friend, Yong Joo (professor), and Jordan Atlas (grad).

Bonnie and Glenn Swan attended the Service Recognition Dinner held on June 5 at Bartels Hall. The Office of the President hosts this event honoring those staff members who have been employed by Cornell for 25, 30, 35, 40, or more years. Awardees are honored at this dinner with commemorative gifts.


Cornell ChEs Give Virginia Tech a Show of Support

On June 25 four CBE/BME staff were recognized for their years of service, totaling 80 years. Belinda Floyd was recognized for 5 years of service, Janice McBride for 15 years of service, Glenn Swan for 25 years of service, and Bonnie Sisco for 35 years of service. Each received a certificate and gift on behalf of the department. Congratulations to all!

Bonnie and Glenn Swan attended the Service Recognition Dinner held on June 5 at Bartels Hall. The Office of the President hosts this event honoring those staff members who have been employed by Cornell for 25, 30, 35, 40, or more years. Awardees are honored at this dinner with commemorative gifts.

Bonnie Sisco talks with Cornell President David Skorton.

From left to right: Award winners Belinda Floyd, Janice McBride, Glenn Swan, and Bonnie Sisco.

“Maroon and Orange Effect Day”

On Friday, April 20, approximately 90 students and faculty, and staff members of the School of Chemical and Biomolecular Engineering donned maroon and orange to show their support and encouragement to the students, faculty, and staff of Virginia Tech. Some of our CBE grads and undergrads have friends who attend Virginia Tech. Students and faculty, and staff members signed a poster, which included the above photo, offering words of encouragement and hope to our colleagues at Virginia Tech. The poster was mailed to Professor John Walz, head of the Department of Chemical Engineering at Virginia Tech.
The CBE School won three of the six awards made by the College of Engineering’s Sustainable Energy Systems Seed Grant program. This was the single best performance of any one department in the College of Engineering. Brad Anton and Yong Joo won an award for their proposal to use electrospun material to tease apart and evaluate the factors that control cellulosic degradation of biomass. Jeff Varner and Matt DeLisa won their award for proposing a way to make a bacterial “assembly line” produce commodity chemicals.

Tobias Hanrath, who joined us this summer from the Technical University of Eindhoven, the Netherlands, as an assistant professor (see article, page 5) won his award for the development of new materials for photovoltaic systems of solar energy conversion and storage. His research at Cornell aims at the full realization of the unique properties of semiconductor nanocrystals as building blocks in solar energy conversion and storage devices.

Paulette Clancy, William C. Hooey Director and professor, has been reappointed director of the School of Chemical and Biomolecular Engineering for another three years effective July 1. Clancy also received the Diversity Programs in Engineering 2007 Commitment to Diversity Award. She was recognized for her commitment to advancing women in engineering and her achievements as director of the School of Chemical and Biomolecular Engineering in recruiting a diverse faculty and student population.

Susan Daniel joined us this summer from Texas A&M University as an assistant professor (see article, page 5). Daniel’s future research will combine her expertise in microfluidics, surface chemistry modification, and lipid bilayers to create novel methods and devices for separation and array formation for combinatorial studies of membrane species.

The Hatfield Foundation has awarded Andrew Hunter a grant to create an image database to assist in the education of graduate students in the area of energy economics and engineering. Hunter created and taught two new core classes in the Master of Engineering concentration in Energy Economics and Engineering offered for the first time in academic year 2006–2007. He has more than 30 years of experience in this area and is now a full-time member of the faculty at Cornell.

Yong Joo was promoted to associate professor with tenure, effective July 1 (see article, page 5). Joo has built a large and productive research group, including creating from scratch an experimental program on electrospinning to complement his theoretical and computational studies of complex fluids. He has been a supportive mentor and guide to his students and has received substantial funding support including awards from industrial concerns.

Assistant Professor Abe Stroock has been named by MIT’s Technology Review as one of their “top innovators under age 35” for his work on microchemical technologies. Stroock’s laboratory has developed a new class of microtechnology which exploits miniature fluidic structure as a vascular system for tissue-like, functional materials.

Assistant Professor David Putnam, Biomedical Engineering and Chemical and Biomolecular Engineering, has been awarded an NSF CAREER Award for an integrated research and educational study of predictive biomaterials design. Putnam’s research is focused on the rational design and synthesis of functional biomaterials to target and control the delivery of drugs or therapeutic genes to specific parts of the body. The pharmaceutical systems of interest include drugs, proteins, genes, and nonviral and viral gene vectors. Putnam was also honored with the Control Release Society Young Investigator Award, and his group authored a manuscript that was one of the top 100 downloaded papers in the field of RNA interference. Putnam had the honor of being awarded the Ralph S. Watts ’72 Teaching Award from the College of Engineering for the second time.

Assistant Professors Jeff Varner and Matt DeLisa received a grant from the Army Research Office. Varner also received a 2007 Innovation Grant from the NYSTAR Designated Center for Advanced Technology. DeLisa had the honor of being awarded the Mr. and Mrs. Richard F. Tucker ’50 Excellence in Teaching Award, as well as being a 2007 recipient of the New York State Foundation for Science, Technology, and Innovation (NYSTAR) Award for faculty development to engineer human-like glycolysatin pathways in bacteria.
enable high-technology systems for consumer electronics, Corning creates and makes keystone components that of materials science and process engineering knowledge, given in recognition of outstanding performance in the Corning Award for Excellence in Chemical Engineering Henrik Van Lengerich and Heidi Park

Henrik Van Lengerich (left), Heidi Park, and Bill Cleary

Henrik Van Lengerich and Heidi Park received the Corning Award for Excellence in Chemical Engineering Science from Bill Cleary of Corning, Inc. This award is given in recognition of outstanding performance in the first year as a Ph.D. candidate. Corning Incorporated is the world leader in specialty glass and ceramics. With 150 years of materials science and process engineering knowledge, Corning creates and makes keystone components that enable high-technology systems for consumer electronics, mobile emissions control, telecommunications, and life sciences.

Upcoming Events

Homecoming

October 13
Join us for a warm “tailgate party” after the game
Fred H. Rhodes Lounge, 128 Olin Hall

Raymond G. Thorpe Lecture

October 29
Evelyn Taylor Pearson Technology Networks Manager, BP Chicago, Ill.

Cornell AIChE Reception

November 6
Hotel Monaco
Salt Lake City, Utah

Julian C. Smith Lecture

Spring dates TBA on ChE web site
Carroll Hall, Professor of Chemical Engineering
North Carolina State University
Raleigh, N.C.

Commencement

Sunday, May 25, 2008
Details of Olin Hall diploma ceremonies
TBA on ChE web site

Reunion Breakfast

8:00-11:00 a.m., June 7, 2008
Olin Hall, tent on Ho Plaza
(Fred H. Rhodes Lounge in case of rain)

Professor Joo and Debbie Audus

ABB Lummus Global Chemical Engineering Recognition Award

Sparsh Bhargava ’07
Established by the company to recognize undergraduate achievement

American Institute of Chemical Engineers, Othmer Award for Academic Excellence

Elizabeth Marcil ’07
Established by the professional organization to recognize undergraduate academic excellence

American Institute of Chemical Engineers, Twin Tiers Outstanding Scholar Award

Adam Gross ’07
Established by the professional organization to recognize outstanding scholarship and leadership in campus, community, and professional activities

American Institute of Chemists Scholar

Moataz Gadalla ’07
Established by the professional organization to recognize undergraduate ability, leadership, character, and scholastic achievement

Rohm & Haas, Ferdinand Rodriguez Outstanding Student Award in Polymers and Electronic Materials

Debra Audus ’07
Established by the company to honor Professor Rodríguez and recognize achievement in academia and in the professional community

Genentech, George F. Scheele Outstanding Junior Award

Christine Tran ’07
Established by the company in memory of Professor George Scheele, former associate director of the school, to recognize academic excellence and achievement in campus and professional activities

Edna and William Hooey Scholarship

Gretchen McAuliffe
Eric Thiesen
Tobias Wheeler
Chongli Yuan
Established in memory of William Hooey by his daughter, Austin Hooey, to recognize quality research by graduate students

Fred H. Rhodes Scholarship

Brittany Held
Bettina John
Established by family and alumni in memory of Professor Fred Rhodes, founder of the school, to provide financial assistance to Ph.D. candidates

H. N. Scholarship

John Dingee
Daniel Slater
Established by an alumna to provide financial assistance to graduate students

Merck Engineering and Technology Fellowship

Sarah Mangan ’07
Established by the company to recognize undergraduate scientific and technical excellence

Merrill Presidential Scholar

Elizabeth Marcil ’07
A university program that honors outstanding seniors and their academic mentor. Marcil recognized Professor Center for inspiring scholastic achievement.

Outstanding Service to the School

Oluwaseun Smith ’07
Recognizes outstanding service to the undergraduate community

Outstanding Teaching Assistant of the Year

Henry Lau (CHME 323, Fluid Mechanics)
Sara Yashi (CHME 432, Unit Operations Laboratory)

Chosen by the undergraduates for outstanding teaching by a graduate assistant

Procter and Gamble Technical Excellence Award

Denise King ’07
Established by the company to recognize undergraduate technical presentation skills

Charles Winding Scholarship

Sugandha Bhargava
Established by alumni in memory of Professor Charles Winding, former director of the school, to provide financial assistance to graduate students

2007 Merck Engineering and Technology Fellowship

Corey Breaton ’09
Matthew Damouchel ’08
Established to encourage the interest of undergraduate students in engineering and science-based disciplines and to provide students the opportunity to gain hands-on experience in a state-of-the-art research or manufacturing environment


Cormac Byrne, Eric Thiesen, Barry Reed, and Professor Paul Steen

The paper is titled “Capillary Puddle Vibrations Linked to Casting-Defect Formation in Planar-Flow Melt Spinning.”

Byrne, Thiesen, and Reed are former ChE graduate students guided by Professor Steen.

Bausch and Lomb Second Annual Student Innovation Award

Nakwon Choi, Ph.D. student

Choi’s award reflects his progress in developing lithographic methods to fabricate functional microfluidic structure directly into materials that contain living cells that are present throughout all the processing steps. This important technological step involved the development of new biological materials and processing methods, perfecting the process with primary bovine chondrocytes, and equine mesenchymal stem cells (MSC). The long-term goal
Help make something wonderful happen in Olin Hall.

Items in italics show some of last year’s items that were supported.

Revitalize our facilities.

- Contribute to the Chemical Engineering Building Fund to help us renovate Olin Hall. Over $40,000 was raised last year with $250,000 under discussion. We have $5M to raise.
- Renovate a lab to facilitate the simulation of biological processes involved in oncology treatment for breast cancer.
- Make a leadership gift for the renovation of the north wing of Olin Hall including naming opportunities.
- Buy an ultra-filtration unit to create a new experiment in the Kenneth Ackley Unit Operations teaching laboratory.
  This has been done with alumni assistance.

Honor our inspirational teachers.

- Support the Ray Thorpe Chair fund to provide one final honor to an inspirational teacher.
  A 1:1 challenge match in alumni donations is in effect.
- Donate to the Peter Harriott fund that supports graduate work in environmentally directed research.
- Support the upkeep of the George F. Scheele Lounge, which provides undergraduates a safe place to work and relax every day of the academic year. Alumni have helped with this.
- Fund the Rodriguez award for outstanding student research in the area of polymers or semiconductors.
  This award is now sponsored by Rohm and Haas.

Improve our educational programs.

- Support an industrial practitioner to lead the senior year experiences in the Unit Operations Laboratory and Process Design courses ($15,000 per semester).
- Fund the development of new courses in our M. Eng. concentration in energy and sustainability ($10,000).
- Provide annual operating costs for the AIChE Student Chemical Car team ($5,000).

Hasten the diversity of our faculty and student body.

- Sponsor the research efforts of a woman or minority faculty member ($5,000–$20,000).
- Enable us to aggressively attract women and minority faculty and graduate students to Cornell ($50,000).
- Provide funds to support our new ChE Graduate Women’s Group to network, travel to conferences, and invite outside speakers ($1,000).

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